



Inducing a benign interpretational bias reduces trait anxiety

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Abstract

If negative interpretational bias causes emotional vulnerability, reduction of this bias should reduce proneness to anxiety. High trait-anxious volunteers were trained over four sessions to resolve descriptions of ambiguous events in an increasingly positive manner. This group subsequently made more positive interpretations of novel descriptions than did those in a test–retest control condition. Furthermore, trait anxiety scores reduced more in the trained group than in untrained controls. These results confirm earlier findings that modifying interpretation biases produces congruent changes in emotional vulnerability, and suggest a possible role for similar training methods in controlling pathological anxiety.

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1. Introduction

It is now well established that those prone to negative emotional states are less likely than are other groups to interpret ambiguous events in a relatively positive manner (Eysenck, Mogg, May, Richards, & Mathews, 1991; Lawson, MacLeod, & Hammond, 2002). In the study reported by Eysenck et al. (1991), anxious patients and nonanxious controls first listened to sentences, some of which were ambiguous and could be interpreted

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in a more or less threatening manner (e.g., the doctor examined little Emma's growth). The way in which the critical sentences were understood was assessed by presenting a series of similar items in which the ambiguous meaning had been resolved in either a threatening or benign direction. In a later recognition test (e.g., by referring to Emma's tumor or her height), nonanxious participants were less likely to endorse threatening than benign meanings as matching the original sentence, whereas anxious patients endorsed the threatening interpretations as often as they did benign meanings.

Such findings suggest—but do not prove—that a (relatively) negative interpretational style could be a contributory cause of vulnerability to anxiety. However, it could be that the apparent associations arise because a preexisting state (or vulnerability) leads to less positive interpretations being made, rather than the other way around. Furthermore, both vulnerability and interpretation style could be independently produced by other processes, so that there might be no direct causal link between mood and interpretation.

More convincing evidence of a causal link between the two has been provided by recent studies in which interpretational biases were experimentally manipulated (Grey & Mathews, 2000; Mathews & Mackintosh, 2000; Yiend, Mackintosh, & Mathews, 2005; Wilson, MacLeod, Mathews, & Rutherford, 2006). In these studies, nonanxious volunteers were randomly allocated to conditions in which they made either negative or benign interpretations of ambiguous text. For example, Mathews and Mackintosh (2000) presented nonanxious volunteers with short texts describing ambiguously threatening social situations, with the emotional outcome being resolved only by the final word, which was presented in fragment form. Participants were required to complete this fragment, and then to answer a question designed to reinforce the designated emotional meaning. Those allocated to a condition in which outcomes were nearly always negative, were subsequently more likely to interpret new ambiguous descriptions in a similarly negative fashion than were those previously exposed to more benign outcomes. Importantly, anxious mood also changed congruently, but only in those who were trained under conditions requiring the active generation of meaning: that is, those who had to complete the resolving fragment and question. In other conditions, participants exposed to the same information—but who did not have to generate it for themselves—developed the same interpretative bias for new descriptions, but did not change in mood.

Thus, although active generation of emotional meanings during training can alter mood, such mood changes are not a necessary condition for the induction of interpretative bias. Some forms of training produced interpretation biases even in the absence of mood change. To further illustrate this point, consider the results reported by Wilson et al. (2006). The training used in this study was based on that developed by Grey and Mathews (2000), in which volunteers were presented with homograph primes having both threatening and benign meanings, followed by a word fragment to complete corresponding to one of these meanings (e.g., the homograph “sink” followed by fragments corresponding to either “drown” or “basin”). No mood change was observed during training, even after prolonged practice with either threatening or benign completions. Despite this, tests with new homographs revealed that a differential interpretative bias had indeed been induced. Participants then viewed a series of videos of real-life accidents and the group assigned to prior practice with threat completions reported greater increases in anxiety than did a comparison group that had practiced benign completions. Thus an interpretative bias can be induced experimentally without necessarily changing mood at

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